

Kitchen Ventilation to reduce air pollution levels from cookstove smoke

Some examples from Malawi

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On behalf of HERA – Poverty-oriented basic energy services

www.giz.de/hera

PCIA-DISCOVER Stove Camp

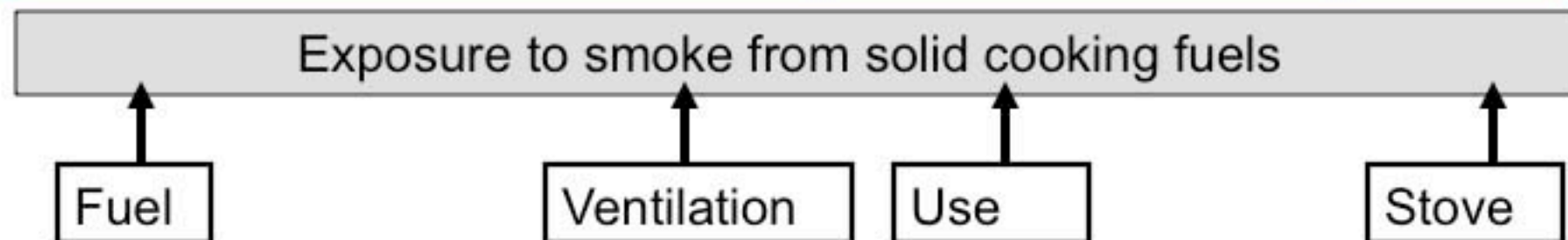
22nd March 2012, Lilongwe, Malawi

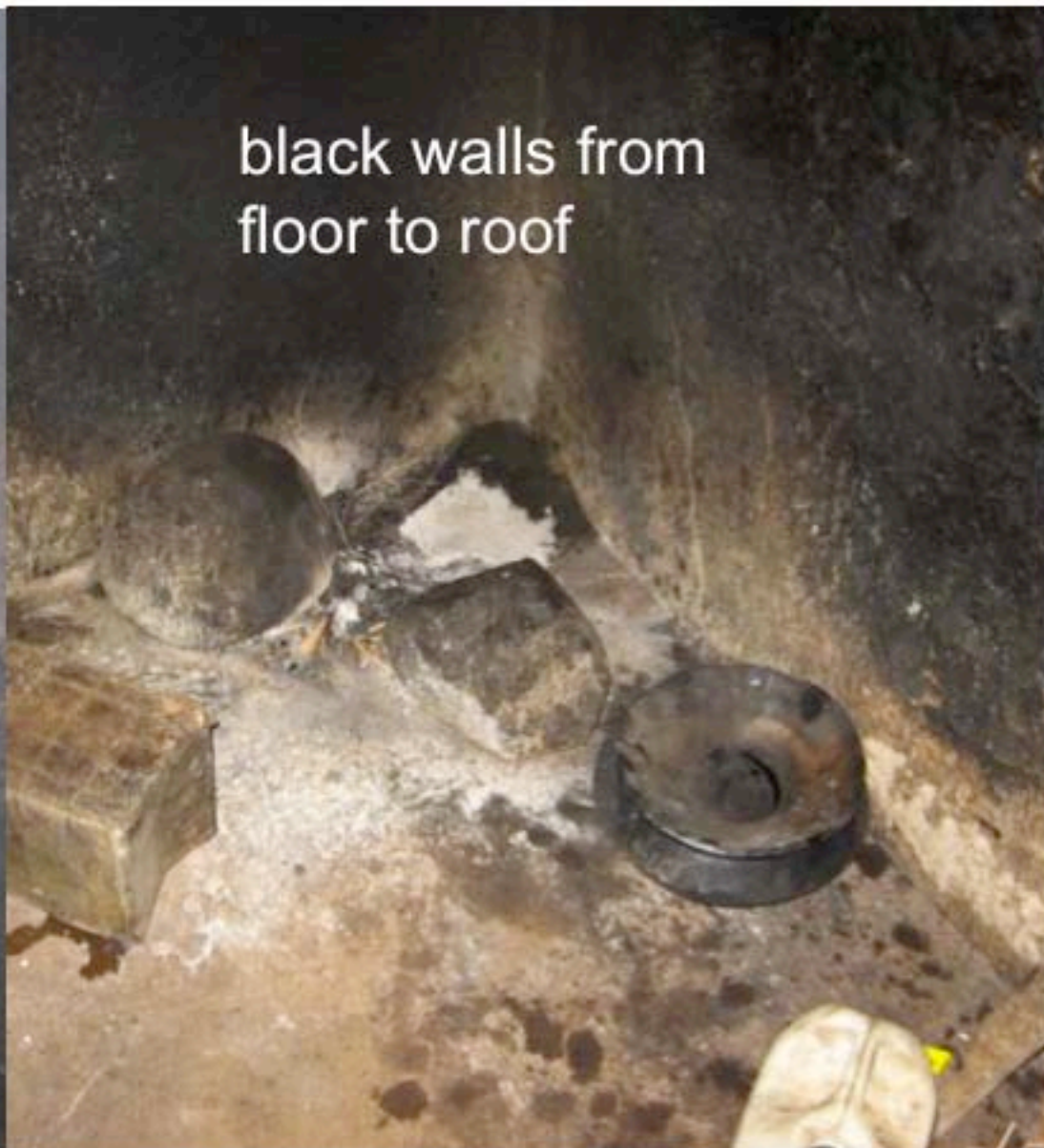


The Cooking Energy System



Access to cooking energy services





black walls from
floor to roof



Soot never lies:

the walls and the roof of this kitchen are totally black, indicating that this kitchen used to be filled entirely with smoke.

The only ventilation was the door, before opening more ventilation slots.



Lintel was the lowest exit point for smoke: soot-line ca 40 cm below





A chimney is no guarantee for smoke removal. Most chimney-stoves only function well with the pot the stove was designed for, not with a kettle without lip.





outlet at highest part of the roof = good smoke removal



no outlet at highest part of the roof = smoke is trapped, black walls





Soot pattern on the wall from the old fire up to the roof, because smoke could not get out of the kitchen.

Cross-ventilation: new slots in walls at the height of peoples noses when cooking - cook must see be able to see outside





2007: ventilation slots, new paint.
2011: soot only above the stove, the wall on the right is still white = sign of effective smoke removal



2007: before and after refurbishment

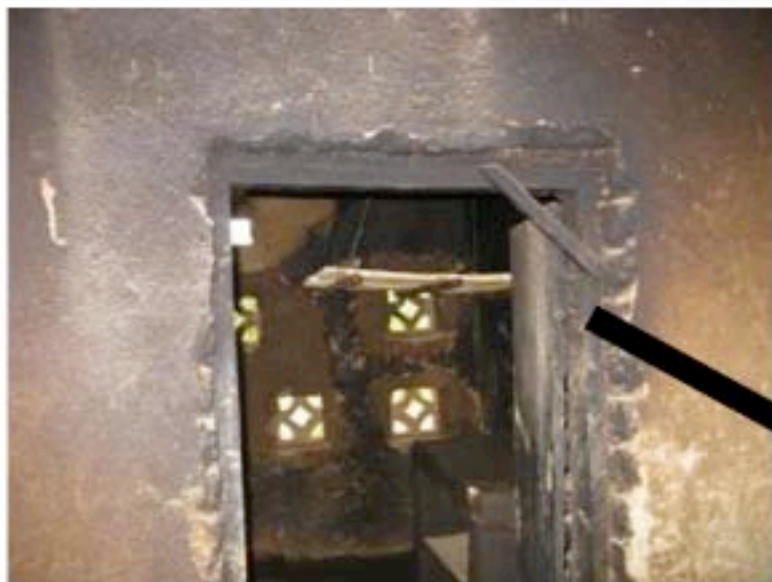
2011: still same paint



If climate allows openings in the wall, simple ventilation slots can guide smoke out. Unlike chimneys, they do not need maintenance.



Smoke from freshly lit stove exits through ventilations slots



2007



inbuilt fireless
cooker

sandbox to extinguish
firewood after cooking



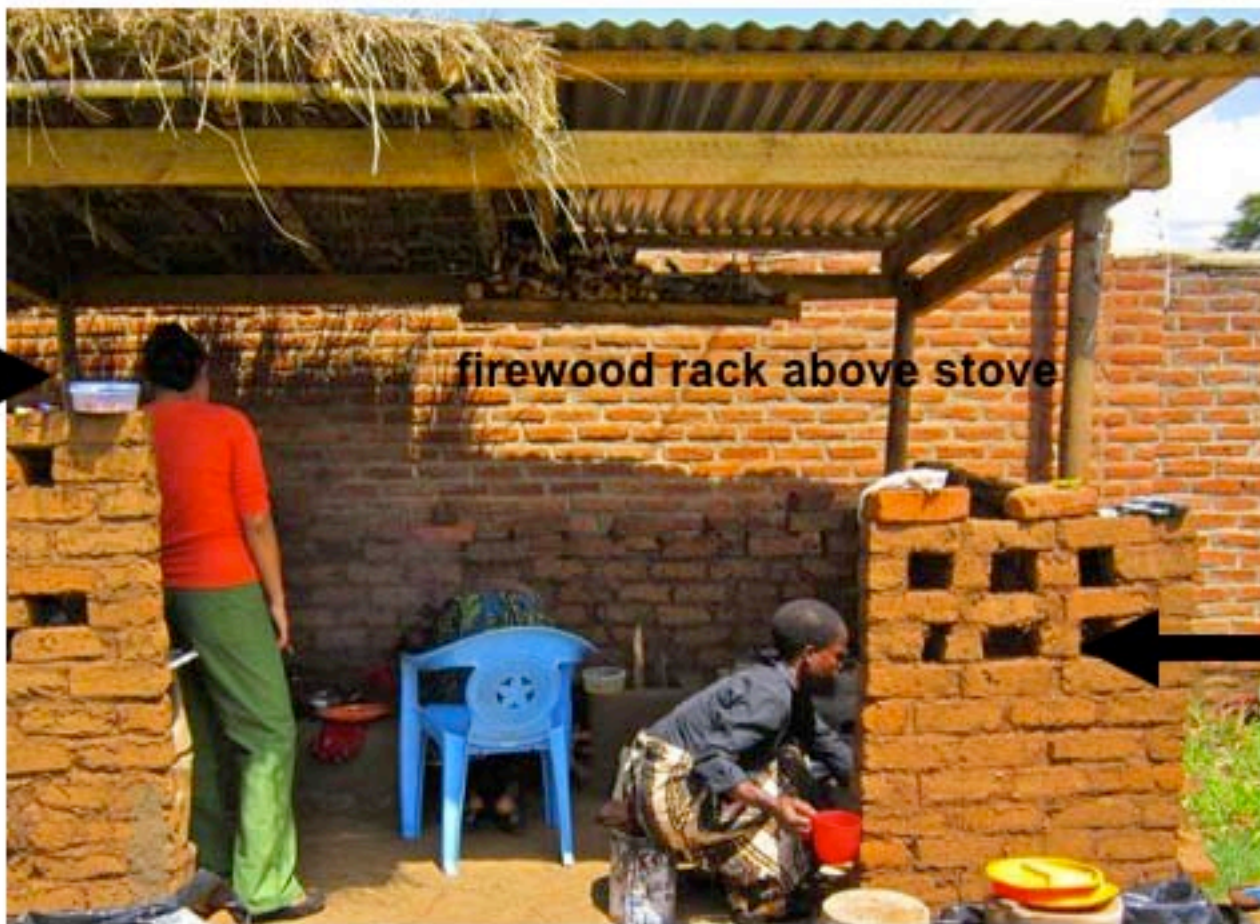
inbuilt stove (complemented by
portable stove)

storage for firewood
next to stove



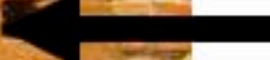
Monopitch roof to guide smoke out, with thatch or ironsheet

open eaves-
spaces
at height of
head of
people
standing



firewood rack above stove

nose
level



wide entrance,
no door

Cross-ventilation: slots in walls at the height of peoples noses when cooking - cook must see be able to see outside



Even the 'cleanest' stove will smoke when used with wet wood.

'Clean' cooking is not a result from the stove, but from how you use it!



Drying rack for firewood under shelter



Thank you very much for
your attention!



On behalf of

Deutsche Gesellschaft für Internationale Zusammenarbeit
GmbH (GIZ) GmbH

HERA – Poverty-oriented basic energy services

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